

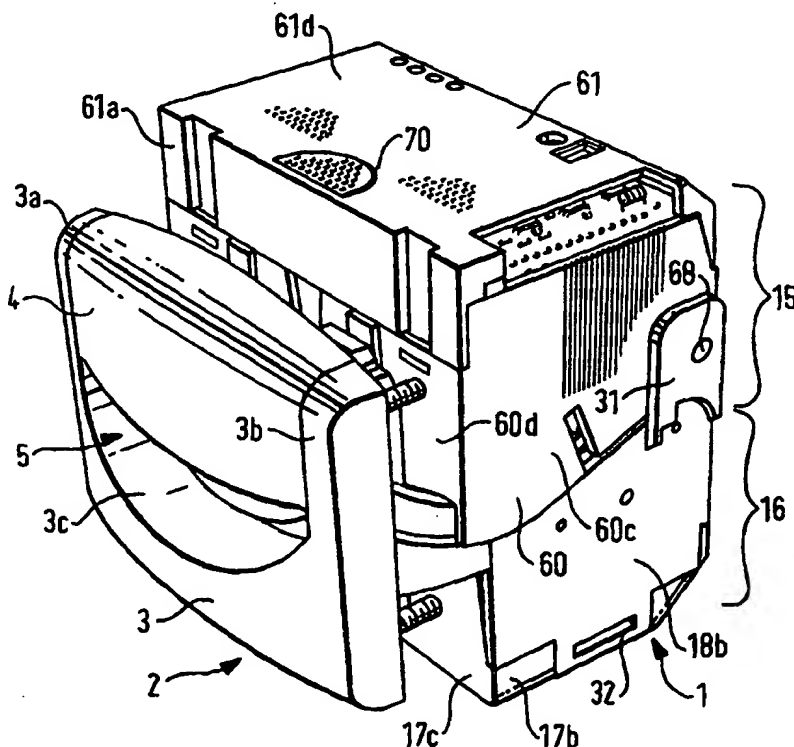


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| (51) International Patent Classification ⁶: G07D 7/00 | A1 | (11) International Publication Number: WO 99/42959 (43) International Publication Date: 26 August 1999 (26.08.99) |
| (21) International Application Number: PCT/GB99/00526 (22) International Filing Date: 19 February 1999 (19.02.99) (30) Priority Data: 98301248.5 19 February 1998 (19.02.98) EP (71) Applicant (for all designated States except US): INNOVATIVE TECHNOLOGY LIMITED [GB/GB]; Derker Street, Oldham OL1 4EQ (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): DUNLOP, Peter [GB/GB]; 18 Park Road, Hyde, Cheshire SK14 4JT (GB). ASHURST, Kevin [GB/GB]; 24 Prince Wood Lane, Birkby, Huddersfiels HD2 2DG (GB). (74) Agents: AHMAD, Sheikh, Shakeel et al.; David Keltie Associates, 12 New Fetter Lane, London EC4A 1AG (GB). | | (81) Designated States: CN, JP, US. Published <i>With international search report.</i> |

(54) Title: BANKNOTE VALIDATOR**(57) Abstract**

A banknote validator includes magnetic and optical sensors (305, 306, 307) and a non-return gate in its banknote path (80). The magnetic sensor (307) comprises a magnetic circuit and an electronic circuit. The magnetic circuit comprises a yoke (402) and two giant magneto-resistors (400, 401) and the electronic circuit comprises a coil (407) arranged to generate a magnetic field in the yoke (402) and first and second feedback control loops. The first loop is responsive to the output of the first giant magneto-resistor (400) to energise the coil (407) so that the giant magneto-resistor operates in a predetermined region of its characteristic. The second loop is responsive to the differential between the giant-magneto-resistor outputs to generate a bias voltage for the second giant-magneto-resistor (401) tending to cause the differential to be zero.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/00526

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G07D7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|---------------------------|
| X | US 4 881 268 A (UCHIDA SHINYA ET AL) 14 November 1989 | 10,11, 13,14, 16,19 |
| A | see claim 1; figure 1 | 12,15, 17,18,20 |
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| A | see claim 1; figure 9 | 1-21,24, 25,27 |
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Date of the actual completion of the international search

6 May 1999

Date of mailing of the international search report

14/05/1999

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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| A | PATENT ABSTRACTS OF JAPAN vol. 017, no. 563 (P-1628), 12 October 1993 & JP 05 159245 A (SHARP CORP), 25 June 1993 see abstract --- | 1-9 |
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| A | US 4 513 439 A (GORGONE ROBERT L ET AL) 23 April 1985 see claim 1; figure 1 ----- | 1-27 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. .ional Application No

PCT/GB 99/00526

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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| US 4881268 A | 14-11-1989 | JP 62296292 A DE 3719373 A FR 2600191 A GB 2192275 A,B | 23-12-1987 23-12-1987 18-12-1987 06-01-1988 |
| US 5540425 A | 30-07-1996 | US 5422467 A AU 675908 B AU 4207296 A AU 664130 B AU 5314394 A CA 2113588 A DE 69407062 D DE 69407062 T EP 0606959 A ES 2113605 T JP 7049976 A US 5534682 A US 5655644 A | 06-06-1995 20-02-1997 04-04-1996 02-11-1995 21-07-1994 16-07-1994 15-01-1998 16-07-1998 20-07-1994 01-05-1998 21-02-1995 09-07-1996 12-08-1997 |
| US 5378885 A | 03-01-1995 | DE 69224995 D DE 69224995 T EP 0610383 A ES 2113960 T JP 7500940 T WO 9309532 A | 07-05-1998 10-12-1998 17-08-1994 16-05-1998 26-01-1995 13-05-1993 |
| EP 0768643 A | 16-04-1997 | JP 9190613 A | 22-07-1997 |
| DE 2713396 A | 28-09-1978 | NONE | |
| US 4513439 A | 23-04-1985 | NONE | |



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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference 07 33392 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 99/ 00526 | International filing date (day/month/year) 19/02/1999 | (Earliest) Priority Date (day/month/year) 19/02/1998 |
| Applicant INNOVATIVE TECHNOLOGY LIMITED et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



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- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



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2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

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the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 99/ 00526

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The abstract is shortened to permits Rule 8.1(b) PCT.
Line 12-21 has been deleted.

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International Application No
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Date of mailing of the international search report

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Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 99/00526

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